

PATENT
Case No. N0084US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
KHAN et al.)
)
Serial No. 09/784,660) Group: 2654
)
Title: DYNAMIC BUILDING,) Examiner:
MAINTENANCE AND USE OF) ANGELA ARMSTRONG
SPATIAL WORD LIST FOR)
AUTOMATIC SPEECH)
GENERATION (as amended))
)
Filed: February 15, 2001)

APPEAL BRIEF

This appeal brief is submitted pursuant to 37 CFR 41.37. This is an appeal of the final Office Action dated September 22, 2005. A Notice of Appeal was timely filed December 16, 2005. Accompanying the Notice of Appeal was Appellant's Pre-Appeal Brief. A panel decision to let this appeal proceed to the Board of Patent Appeals and Interferences was mailed on February 1, 2006.

(1) REAL PARTY IN INTEREST

The real party in interest is NAVTEQ North America, LLC (formerly named Navigation Technologies Corporation), a publicly-traded corporation that has its headquarters in Chicago, Illinois.

(2) RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

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(3) STATUS OF CLAIMS

Claims 1-18, 20 and 21 are allowed.

Claim 19 was rejected as obvious under 35 U.S.C. § 103 over the combination of U.S. Pat. No. 6,112,174 (“Wakisaka”) and U.S. Pat. No. 6,598,016 (“Zavoli”).

Claim 19 has been appealed.

(4) STATUS OF AMENDMENTS

There has been no amendment filed subsequent to the final rejection.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

Appellant’s Claim 19 relates to a system that provides geographic information (page 4, lines 13-14 and 110 in FIGS. 1 and 2). The geographic information system of Appellant’s Claim 19 includes an “*automatic speech recognition system*” (page 8, line 29 - page 9, line 10 and 260 in FIG. 2). The “*automatic speech recognition system*” of Appellant’s Claim 19 uses a “*word list*” (page 9, lines 6-14 and 262 in FIG. 4) containing “*data representations of spoken names of geographic features*. ” In order to facilitate recognition of names of geographic features, the number of words on the “*word list*” is limited to “*only a portion of all available data representations of spoken names of geographic features*” (page 9, lines 24-29). In order to select which available data representations of spoken names of geographic features to include in the “*word list*”, the “*word list*” contains a “*first part*” (460 in FIG. 4) that “*changes to include different words as the vehicle travels in the region*” (page 14, lines 26-29 and page 15, lines 22-

29). The “*first part*” includes “*words*” for “*names of geographic features in proximity to the current location of the vehicle*” (page 12, lines 22-25 and page 13, lines 5-9).

In addition to the “*first part*” (460 in FIG. 4), the “*word list*” (262 in FIG. 4) contains a “*second part*” (454 in FIG. 4). The “*second part*” (454 in FIG. 4) “*does not change . . . as the vehicle travels*” (page 12, line 16 and page 14, lines 29-30). The “*second part*” includes “*words for names of selected geographic features located throughout the region*” (page 12, lines 6-15).

Appellant’s Claim 19 further recites that both the “*first part*” and the “*second part*” are available to the “*automatic speech recognition system*” “*at the same time*” so that the words in either the “*first part*” (460 in FIG. 4) or the “*second part*” (454 in FIG. 4) of the “*word list*” (262 in FIG. 4) can be recognized (page 12, lines 5-15 and page 17, lines 3-4). This allows for recognition of names of geographic features located in proximity to the vehicle as well as recognition of names for selected geographic features, such as popular destinations (page 12, lines 10-11), not located in proximity to the vehicle.

(6) GROUNDS OF REJECTION TO BE REVIEWED

At issue is whether Appellant’s Claim 19 is obvious under 35 U.S.C. § 103 over the combination of Wakisaka and Zavoli.

(7) ARGUMENT

A. Speech recognition performance

Appellant's Claim 19 relates to improving performance of automatic speech recognition in a geographic information system used with a vehicle. Automatic speech recognition systems operate by matching the sound profiles of spoken words to sound profiles of words stored as data. In systems that provide geographic information, such as vehicle navigation systems, it is common for a user to specify the name of a place as a desired destination. Systems that provide geographic information may support travel throughout an entire country or even several countries. Thus, when a user of such a system specifies a desired destination by speaking the name of a place, there may be many thousands of possible matches. Automatic speech recognition performance is reduced when a spoken word must be compared to a large number of possible stored profiles of words in order to find a match. Thus, limiting the number of possible matches can improve performance of an automatic speech recognition system.

B. The applied prior art references(i.) Wakisaka

Wakisaka discloses one way to limit the number of possible matches to improve automatic speech recognition performance in a navigation system. Wakisaka divides a large geographic region into a plurality of smaller geographic areas (304 and 305 in FIG. 3A of Wakisaka) and then separates all the names of geographic places into a plurality of separate "dictionaries" (306 in FIG. 3B of Wakisaka) based on these smaller, pre-defined geographic areas. In other words, in Wakisaka, each "dictionary" contains only the names of places located in a corresponding separate one of the smaller geographic areas

into which the entire large geographic region is divided. As a vehicle with the Wakisaka navigation system travels throughout a geographic region, the system selects the appropriate dictionary to use for speech recognition purposes based on the current location of the vehicle (*see*, Wakisaka: column 5, lines 15-34). Wakisaka discloses using only one dictionary at a time, i.e., by selecting only one dictionary to be stored in a second storage section based on the current location of the vehicle (*see*, Wakisaka: column 2, lines 50-53). Since each dictionary in the Wakisaka system corresponds to a separate geographic area and since Wakisaka uses only one dictionary at a time, the words available for speech recognition purposes are limited to only those that refer to places located in the particular one of the pre-defined geographic areas in which the vehicle is currently located.

(ii.) **Zavoli**

Zavoli discloses another way to limit the number of possible matches for automatic speech recognition to improve performance when specifying geographic locations to a computer navigation system (Zavoli: column 2, lines 35-38). Zavoli reduces the number of possible matches that a speech recognition system needs to analyze by requiring the user to specify different kinds of words at different times (Zavoli: column 6, lines 32-52). Specifically, Zavoli requires the user of the navigation system to speak commands and numbers separately and at a different time than geographic places. According to Zavoli, two separate speech recognition dictionaries are provided (Zavoli: column 5, lines 49-53). Zavoli states that a first dictionary, VR1, includes numbers and simple commands whereas a second dictionary, VR2, includes

street names (Zavoli: column 5, lines 23-29). Zavoli states that the advantage of using separate dictionaries is that the dictionary used for only commands and numbers can be made smaller thereby increasing the reliability and speed of recognizing this type of speech input (Zavoli: column 5, line 65-column 6, line 8).

C. Appellant's Claim 19

Appellant's Claim 19 describes a different way to improve speech recognition performance in a geographic information system used with a vehicle. Appellant's Claim 19 describes *inter alia* an "*automatic speech recognition system*" that uses a "*word list*" that contains two parts. The "*first part*" of the "*word list*" "*changes to include different words as the vehicle travels in the region.*" Further, the "*first part*" of the "*word list*" includes "*words*" for "*names of geographic features in proximity to the current location of the vehicle.*" The "*second part*" of the "*word list*" "*does not change . . . as the vehicle travels*" and includes "*words for names of selected geographic features located throughout the region.*" Appellant's Claim 19 further recites that both the "*first part*" and the "*second part*" are available "*at the same time*" so that the words in either "*part*" of the "*word list*" can be recognized, thereby allowing for recognition of names for geographic features located in proximity to the vehicle as well as for selected geographic features not located in proximity to the vehicle.

**D. Appellant's Claim 19 is not obvious over
the combination of Wakisaka and Zavoli.**

**(i.) The premise for combining
Wakisaka and Zavoli is factually incorrect.**

The final Office Action acknowledged that Wakisaka failed to disclose the “second part” of the “word list” recited in Appellant’s Claim 19 wherein both the “first part” and the “second part” are available “*at the same time.*” However, the position was taken in the final Office Action that Zavoli suggested this missing feature of Appellant’s claim. Specifically, the final Office Action included the following statement:

Zavoli teaches modules VR1 and VR2 for voice recognition systems that provide for two separate dictionaries such that one module can be used for numbers and a small set of commands and the other can be street names for a particular map. This set of more than one module for voice recognition with multiple dictionaries reads on the feature that the word list includes a 2nd part that does not change to include different words as the vehicle travels in the region and that includes words for names of selected geographic features located throughout the region (column 5, line 10 to col. 6, line 31) wherein both the first and second part are available to the automatic speech recognition system at the same time ([sic] particularly when representing a trip. (Final Office Action, page 4, lines 8-16.)

One reason why Appellant’s Claim 19 is not obvious is that the premise set forth in the final Office Action for combining Zavoli with Wakisaka is factually incorrect. Zavoli explicitly discloses that the two modules VR1 and VR2 are *not* both available for automatic speech recognition at the same time, as asserted in the final Office Action. Several passages in Zavoli explicitly disclose that the two speech modules, VR1 and VR2, are not both available at the same time.

One passage from Zavoli that confirms that the two speech modules, VR1 and VR2, are not both available at the same time refers to a “state diagram” (Zavoli: column 6, line 32-column 7, line 42; and FIG. 3). In Zavoli’s state diagram, VR1 is used when

the system is in the "Map Display", "Digit", and "Geo Start" states, but VR2 is used when the system is in the "Street Name" and "Cross Street Name" states.

The fact that VR1 and VR2 are used in exclusive states is confirmed by the flowchart disclosed in Zavoli showing steps in a process in which either VR1 is used or VR2 is used, but not both at the same time (Zavoli: FIGS. 4, 5 and 6; column 7, line 57-column 10, line 16). According to the flowchart in FIGS. 4, 5 and 6 of Zavoli, the state variable "*which_vr*" is set to VR1 at "step 200", "step 212", "step 280", "step 290", and "step 360." The state variable "*which_vr*" is set to VR2 at "step 350" in FIG. 6. These passages from Zavoli unequivocally confirm that the two speech modules, VR1 and VR2, are not both available at the same time.

Still another compelling reason that supports Appellant's position that the two Zavoli speech modules, VR1 and VR2, are not both available at the same time is that having both speech modules available at the same time would directly contradict the advantage specifically expressed by Zavoli for forming the two speech modules in the first place. As Zavoli states, the advantage of using separate dictionaries is that the dictionary used for only commands and numbers can be made smaller thereby increasing the reliability and speed of recognizing this type of speech input (Zavoli: column 5, line 65-column 6, line 8). If both VR1 and VR2 were available at the same time, as asserted in the final Office Action, this advantage explicitly taught by Zavoli would be eliminated.

Because the reason set forth in the final Office Action for modifying Wakisaka is based on a factually incorrect assertion about what Zavoli teaches, the premise in the final Office Action for combining these references is likewise in error. Therefore, Appellant's Claim 19 is not obvious over these two references.

(ii) **The combination of Wakisaka and Zavoli fails to disclose all the elements of Appellant's Claim 19.**

Another reason why Appellant's Claim 19 is not obvious over Wakisaka and Zavoli is that all the elements of Claim 19 are not disclosed by the combination of these references, even if they were combined as suggested in the final Office Action. Specifically, even if Wakisaka and Zavoli were combined, the resultant combination would still fail to disclose a "*second part*" of a "*word list*" that "*does not change . . . as the vehicle travels*" and that includes "*words for names of selected geographic features located throughout the region*", as recited in Appellant's Claim 19.

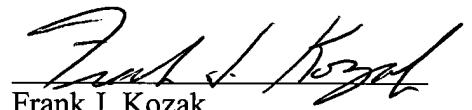
As previously pointed out, Wakisaka discloses a navigation system with a plurality of speech recognition dictionaries, each of which contains a separate collection of words for the names of geographic places located in a corresponding separate one of a plurality of distinct geographic areas into which a region is divided. However, Wakisaka discloses using only one speech recognition dictionary at a time and changing from one dictionary to another as the vehicle in which the navigation system is installed moves from one of the corresponding geographic areas to another. Zavoli discloses having two dictionaries (i.e., "modules") in a speech recognition system, one for names for geographic features (i.e., street names) and the other for commands and numbers. However, Zavoli teaches that these two dictionaries are not both available for use at the same time. As pointed out above, Zavoli discloses a "state diagram" (Zavoli: column 6, line 32-column 7, line 42; and FIG. 3) that shows that the dictionary VR1 is used when the system is in the "Map Display", "Digit", and "Geo Start" states, but that the dictionary VR2 is used when the system is in the "Street Name" and "Cross Street Name"

states. Likewise, Zavoli discloses a flowchart showing steps in a process in which either VR1 is used or VR2 is used, but not both at the same time (Zavoli: FIGS. 4, 5 and 6; column 7, line 57-column 10, line 16). Thus, Wakisaka and Zavoli both disclose using only a single dictionary at a time: Wakisaka switches dictionaries based on location and Zavoli switches dictionaries (“modules”) based on requiring the user to speak commands and numbers separately from place names. Thus, if Wakisaka and Zavoli were combined, the result would not disclose a speech recognition system that uses two dictionaries at the same time because this feature is not disclosed or suggested either of these references. There is no teaching in these references that would motivate one of ordinary skill in the art to modify a single dictionary for geographic feature names, as disclosed by either Wakisaka or Zavoli, to have two “*parts*”, as recited in Appellant’s Claim 19, where a “*first part*” “*changes to include different words as the vehicle travels in the region*” and includes “*words*” for “*names of geographic features in proximity to the current location of the vehicle*” and a “*second part*” of the “*word list*” “*does not change . . . as the vehicle travels*” and includes “*words for names of selected geographic features located throughout the region.*” At least for these reasons, Appellant’s Claim 19 is not obvious over the combination of Wakisaka and Zavoli.

E. ARGUMENT CONCLUSION

As explained above, Appellant's Claim 19 recites a feature that is not found in either Wakisaka or Zavoli. Specifically, Appellant's Claim 19 includes a "word list" that has "two parts": one for the names of places near a vehicle's current position and the other for the names of places throughout an entire region. Both "parts" of the "word list" are available for speech recognition purposes at the same time. Neither Wakisaka nor Zavoli discloses having more than one word dictionary available for speech recognition purposes at the same time. Therefore, there is no basis for rejecting Appellant's Claim 19 for being obvious over these two references. Accordingly, Appellant respectfully requests the Board to reverse the rejection of Claim 19.

Respectfully submitted,


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(8) CLAIMS APPENDIX

19. A system that provides geographic information and that is formed of component systems comprising:

a positioning system that determines a current location of a vehicle in a region; an automatic speech recognition system that matches data representations of words spoken by a user of the vehicle to a word list of data representations of spoken names of geographic features,

wherein the word list of data representations of spoken names of geographic features includes only a portion of all available data representations of spoken names of geographic features, and wherein the word list includes

a first part that changes to include different words as the vehicle travels in the region such that the first part includes words for names of geographic features in proximity to the current location of the vehicle;

a second part that does not change to include different words as the vehicle travels in the region and that includes words for names of selected geographic features located throughout the region,

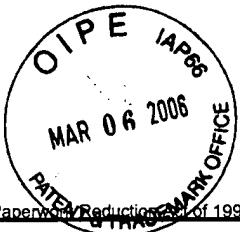
and wherein both the first part and the second part are available to the automatic speech recognition system at the same time.

(9) EVIDENCE APPENDIX

There is no evidence to include with this appeal.

(10) RELATED PROCEEDINGS APPENDIX

There are no related proceedings.

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

15

Application Number	09/784,660
Filing Date	February 15, 2001
First Named Inventor	KHAN
Art Unit	2654
Examiner Name	ANGELA ARMSTRONG
Attorney Docket Number	N0084US

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
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<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	
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<input type="checkbox"/> Reply to Missing Parts/ Incomplete Application	<input type="checkbox"/> Landscape Table on CD	
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Frank J. Kozak, Chief Intellectual Property Counsel, NAVTEQ North America, LLC		
Signature			
Printed name	Frank J. Kozak		
Date	February 28, 2006	Reg. No.	32,908

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